

## **DIESEL OFF-ROAD EQUIPMENT MEASURE REGULATORY CONCEPTS**

- I. **Purpose** – The overall goals of the Air Resources Board (ARB) for reducing public exposure to diesel particulate matter (PM), which is a toxic air contaminant, are described in ARB's 2000 *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. The primary purpose of this measure is to reduce diesel PM emissions from off-road equipment as much as technically and economically feasible in the short- and long-term. A secondary purpose is to reduce oxides of nitrogen (NOx) emissions as well.
- II. **Applicability** – Rule will apply to any person who sells, offers for sale, purchases, owns, or operates any mobile diesel-fueled off-road compression ignition equipment over 25 horsepower. Such equipment is used in construction, mining, airport ground support equipment, and industrial operations. The measure will not cover locomotives, commercial marine vessels, marine engines, recreational vehicles, or combat and tactical support equipment. The measure will also not cover stationary or portable equipment, or equipment used in agricultural operations, at ports or intermodal railyards, or already covered by another measure or agreement.
- III. **Definitions**
  - a. Agricultural operations – Agricultural operations means the growing or harvesting of crops or the raising of fowl or animals for the primary purpose of making a profit, providing a livelihood, or conducting agricultural research or instruction by an educational institution. Agricultural operations do not include activities involving the processing or distribution of crops or fowl.
  - b. Airport Ground Support Equipment Fleet – An airport ground support equipment fleet is a fleet that contains primarily airport ground support equipment. Airport ground support equipment (GSE) is mobile diesel-fueled off-road compression ignition equipment over 25 horsepower used to service and support aircraft operations. GSE perform a variety of functions, including but not limited to: starting aircraft, aircraft maintenance, aircraft fueling, transporting cargo to and from aircraft, loading cargo, baggage handling, lavatory service, and food service. GSE include equipment types such as baggage tugs, belt loaders, and cargo loaders.
  - c. Combat and Tactical Support Equipment – Equipment that meets military specifications, is owned by the U.S. Department of Defense and /or the U.S. military services or its allies, and is used in combat, combat support, combat service support, tactical or relief operations or training for such operations.
  - d. Construction/Mining Equipment Fleet – A construction/mining equipment fleet is a fleet that contains primarily construction/mining equipment. Construction/mining equipment is mobile diesel-fueled off-road compression ignition equipment over 25 horsepower commonly used in building or

demolition operations, or the extracting of materials from the earth. Construction/mining equipment includes such equipment types as loaders, backhoes, scrapers, and excavators. Construction/mining equipment fleets include fleets owned by construction, mining, landscaping, recycling, landfilling, and composting companies, as well as government agencies.

- e. Equipment to Alleviate Emergency Event – Equipment to alleviate emergency event is equipment (1) kept in California and used exclusively for emergency operations or (2) brought into California and kept in California for less than 6 months for use in emergency operations. Emergency operation means helping alleviate an immediate threat to public health or safety. Examples of emergency operation include repairing or preventing damage to roads, buildings, terrain, and infrastructure as a result of an earthquake, flood, storm, fire, terrorism, or other act of nature.
- f. Final Tier 4 PM Emission Standards – The final after-treatment-based Tier 4 emission standards in Table 1 b of Title 13, CCR, Section 2423, as shown in the table below:

Horsepower	PM Standard [g/bhp-hr]
25-74	0.02
75-174	0.015
175-750	0.015
>750	0.03

- g. Industrial Equipment Fleet – An industrial equipment fleet is a fleet that contains primarily industrial equipment. Industrial equipment is mobile diesel-fueled off-road compression ignition equipment over 25 horsepower that is not construction/mining equipment or airport ground support equipment. Industrial equipment includes equipment types such as forklifts, aerial lifts, mowers, and snow cats. Industrial equipment may include equipment used in manufacturing, warehousing, and ski industry operations, as well as in other industries.
- h. Interim Tier 4 PM Emission Standards – The interim Tier 4 emission standards in Table 1 b of Title 13, CCR, Section 2423, as shown in the table below:

Horsepower	PM Standard [g/bhp-hr]
25-74	0.22
>750	0.07

- i. Large fleets – Fleet with 5 or more pieces of mobile diesel-fueled off-road compression ignition equipment over 25 horsepower.
- j. Low-use Equipment – Low-use equipment is equipment that operates less than 50 hours per year, based on a three calendar-year rolling engine-hour average. Until December 31, 2009, if less than three years of engine

operating hour data are available, the low-use definition may be based on an average of annual engine operating hours since January 1, 2007. Equipment that operates both inside and outside of California can meet the low-use equipment definition if it is used less than 50 hours per year in California, based on a three-year rolling engine-hour average.

- k. Sequential Engine Identification Number – Each engine in an owner's fleet subject to this rule should be assigned and labeled with a unique sequential engine identification number (1, 2, 3, etc.). All reporting and recordkeeping will link engine data with this number.
- l. Small fleet - Fleet with less than 5 pieces of mobile diesel-fueled off-road compression ignition equipment over 25 horsepower
- m. Tier 0 – For the purposes of the performance requirements in IV, Tier 0 is defined as in the table below:

Horsepower	Tier 0: Engine Model Year at or Earlier Than
25-49	1998
50-99	1997
100-174	1996
175-750	1995
>750	1999

- n. Tier 1 - For the purposes of the performance requirements in IV, Tier 1 is defined as in the table below:

Horsepower	Tier 1: Engine Model Year In Range
25-49	1999-2003
50-99	1998-2003
100-174	1997-2002
175-299	1996-2002
300-599	1996-2000
600-750	1996-2001
>750	2000-2005

- o. Tier 2 Emission Standards – The Tier 2 new engine PM emission standards in Table 1a of Title 13, CCR, Section 2423, as shown in the table below:

Horsepower	PM Standard [g/bhp-hr]
25-49	0.45
50-99	0.30
100-174	0.22

175-750	0.15
>750	0.15

- p. Tier 3 Emission Standards – The Tier 3 new engine PM emission standards in Table 1a of Title 13, CCR, Section 2423, as shown in the table below:

Horsepower	PM Standard [g/bhp-hr]
75-99	0.30
100-174	0.22
175-750	0.15
>750	0.15

- q. To Retire – To take an engine out of service and not operate it again in the State of California. Engine may be moved outside of California, sold outside of California, or scrapped.
- r. Verified Diesel Emission Control System (VDECS) – An emissions control strategy, designed primarily for the reduction of diesel PM emissions, which has been verified pursuant to the “Verification Procedures for In-Use Strategies to Control emissions from Diesel Engines” in Title 13, California Code of Regulations, commencing with Section 2700.

#### IV. Performance Requirements –

##### a. Small Fleet Requirements

The control technology requirements described in IV.b. below do not apply to small fleets. However, small fleets must comply with the January 1, 2008 initial equipment reporting requirements.

As of January 1, 2008, small fleets are prohibited from adding any mobile diesel-fueled off-road compression ignition equipment with Tier 0 or Tier 1 engines to their fleets, unless it has been retrofit with at least a Level 2 control device.

As of January 1, 2017, small fleets may no longer operate equipment with Tier 0 or Tier 1 engines, unless the equipment is low-use equipment as defined above or has been retrofit with at least a Level 2 control device. As of January 1, 2020, small fleets may no longer operate low-use equipment with Tier 0 or Tier 1 engines, unless the equipment has been retrofit with at least a Level 2 control device.

##### b. Large Fleet Requirements

By January 1, 2008, large fleets must choose one of the following compliance paths and notify ARB of their choice:

- Best Available Control Technology (BACT), or
- Fleet Average

Low-use equipment is not required to meet the BACT or fleet average requirements. However, by January 1, 2020, low-use equipment in large fleets must use an engine or power system certified to the Tier 3 emission standards (in Table 1a of Title 13, CCR, Section 2423), or interim or final Tier 4 emission standards (in Table 1b of Title 13, CCR, Section 2423), or must be retrofit with at least a Level 3 VDECS.

The large fleet compliance paths are described further below.

### 1. **BACT Path**

Large fleets choosing the BACT compliance path must use BACT on each engine as required by the compliance schedule below:

Group	Engine Model Years	Compliance Phase-in Dates <sup>1</sup>			
		25%	50%	75%	100%
1	Pre-1988	2009	2010	2011	2012
2	1988-1995	2011	2012	2013	2014
3	1996-2002	2010	2011	2012	2013
4	2003-2006	2012	2013	2014	2015
5 <sup>2</sup>	2007-2021	Model year (MY) +5	MY+6	MY+7	MY+8

The final Tier 4 standards will be in effect for engines of all horsepower by 2015. However, some “flexibility engines” that will not meet the final Tier 4 emission standards can be manufactured during the years Tier 4 standards are in effect due to percent of production allowances, existing allowances, etc. Such “flexibility engines” must meet BACT just like any other pre-final Tier 4 engine.

BACT is defined as meeting one of the following BACT options:

- **Final Tier 4 or equivalent:** An engine or power system certified to the final Tier 4 particulate matter (PM) emission standard as defined above<sup>3</sup> or the 2007 or later

<sup>1</sup> 25% of model year group must meet BACT by Jan. 1 of first year, 50% by Jan. 1 of second year, 75% by Jan. 1 of third year, and 100% by Jan. 1 of the fourth year. If the phase-in percentage times the number of engines in a model year group is not equal to a whole number, the owner shall round up when the fractional part is greater than or equal to one-half, and round down when the fractional part of is less than one-half.

<sup>2</sup> Each model year in Group 5 has its own compliance phase-in dates. For example, 25% of model year 2007 engines must be retrofit by Jan. 1, 2012, 50% by Jan. 1, 2013, 75% by Jan. 1, 2014, and 100% by Jan. 1, 2015.

<sup>3</sup> Final Tier 4 PM standards must be met by 2011-2013 for engines ≤ 750 hp and 2015 for engines >750 hp (except for some engines may not meet standards due to manufacturer flexibility provisions).

model year on-road emission standards for the year manufactured as specified in Title 13, California Code of Regulations (CCR), Section 1956.8. *This BACT option will most likely involve replacing the whole piece of equipment with equipment with a Tier 4 engine.*

OR

- Tier 0 and Highest Level VDECS: An engine not certified to an on- or off-road diesel engine standard, and used with the highest level VDECS available as of the compliance date.<sup>4</sup> If the highest level VDECS is Level 1, then by Jan. 1, 2016, install a Level 3 VDECS, or meet the final Tier 4 particulate emission standard.<sup>3</sup> *If there is no VDECS available for the Tier 0 engine as of the compliance date, then this BACT option is not available.*

OR

- Tier 1 and Highest Level VDECS: An engine certified to the Tier 1 off-road diesel engine standard, and used with the highest level VDECS available as of compliance date. If the highest level VDECS is Level 1, then by Jan. 1 of the latter of the engine model year plus 10 years or 2016, either install a Level 3 VDECS, or meet the final Tier 4 particulate emission standard.<sup>3</sup> *This BACT option may involve repowering with a Tier 1 engine, or replacing the whole piece of equipment with equipment with a Tier 1 engine, and then retrofitting with a VDECS. If there is no VDECS available for the Tier 1 engine as of the compliance date, then this BACT option is not available.*

OR

- Tier 2/3/interim 4 and Highest Level VDECS: An engine certified to the Tier 2 or Tier 3 or interim Tier 4 off-road diesel engine standard, and used with the highest level VDECS available as of compliance date. If the highest level VDECS is Level 1, then by Jan. 1 of the latter of the engine model year plus 10 years or 2016, either install a Level 2 or 3 VDECS<sup>5</sup>, or meet the final Tier 4 particulate emission standard.<sup>3</sup> *This BACT option may involve repowering with a Tier 2 or 3 engine, or replacing the whole piece of equipment with equipment with a Tier 2 or 3 engine, and then retrofitting with a VDECS.*

OR

- Alternative fuel or heavy-duty pilot ignition engine.

OR

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<sup>4</sup> Retrofit would only be required if a diesel PM control technology is verified for the engine in question, and if the engine's use pattern is appropriate for that technology (i.e., a diesel emission control strategy manufacturer or authorized dealer agrees device can be used on the specified engine without jeopardizing the original engine warranty).

<sup>5</sup> Must install highest level VDECS available as of Mar. 1, 2015. If both Level 2 and Level 3 VDECS are available, must install Level 3 VDECS.

- No final Tier 4 engine or VDECS available. As of the compliance date, if no equipment with an engine meeting the final Tier 4 PM emission standard is available for the given equipment type and application, and no VDECS is available for the engine, then:

If the engine is Tier 0, then must either:

1. Use an engine certified to the Tier 2 or 3 or interim Tier 4 off-road diesel engine standard, and install the highest level VDECS available as of compliance date. If there is no VDECS or the highest level VDECS is Level 1, then by Jan. 1, 2016, either install a Level 2 or 3 VDECS<sup>5</sup>, or meet the final Tier 4 particulate emission standard.<sup>3</sup>

or

2. Use an engine certified to the Tier 1 off-road diesel engine standard, and install the highest level VDECS available as of compliance date. If there is no VDECS available for the Tier 1 engine, then this BACT option is not available. If the highest level VDECS is Level 1, then by Jan. 1 of the latter of the engine model year plus 10 years or 2016, either install a Level 3 VDECS, or meet the final Tier 4 particulate emission standard.<sup>3</sup>

If the engine is not Tier 0, then must either:

1. Use an engine or power system certified to the final Tier 4 PM emission standard within 12 months after such an engine becomes available, or Jan. 1 of the engine model year plus 10 years, whichever is later.<sup>3</sup> *This will likely involve replacing the whole piece of equipment with equipment with a newer engine.*

or

2. If a VDECS becomes available for the engine (i.e., is verified), install the VDECS within 12 months. If the highest level VDECS is Level 1, then by Jan. 1 of the latter of the engine model year plus 10 years or 2016, must either install a Level 2 or 3 VDECS,<sup>5</sup> or meet the final Tier 4 particulate emission standard.<sup>3</sup>

## 2. **Fleet Average Path**

Fleets choosing the fleet average path must comply with the PM emission fleet averages shown in the tables below. The PM emission fleet averages are expressed as grams per brake horsepower-hour (g/bhp-hr). The fleet average PM emission rates are determined by the following formula for each horsepower group (0-174 hp, 175-750 hp, and >750 hp):

Fleet Average = [Sum of (bhp x Emission Factor) for all engines in horsepower group] ÷ [Sum of (bhp) for all engines in horsepower group]

where:

bhp = Maximum rated horsepower for engine

*Emission Factor* = PM emission standard to which engine is certified in g/bhp-hr. If the engine is not certified to an emission standard (i.e., is a Tier 0 engine or a Tier 1 engine with no PM standard), the Emission Factor is the uncontrolled emission factor shown in Appendix A.

For engines certified to a Family Emission Limit (FEL), the Emission Factor is the FEL.

For engines that have been retrofit with VDECS, the Emission Factor is the PM emissions standard to which the engine is certified times 0.75 for a Level 1 VDECS, 0.50 for a Level 2 VDECS, or 0.15 for a Level 3 VDECS.

To avoid having to meet multiple sets of fleet average targets, each equipment owner should choose whether his fleet is construction/mining, airport ground support equipment, or industrial based on the primary function of his fleet. For example, a fleet that contains some construction equipment but is used primarily for aircraft support operations would be defined as “airport ground support.”

Each fleet must calculate fleet average PM emission factors for each horsepower group (0-174 hp, 175-750 hp, and >750 hp) for which has at least one piece of equipment. Thus, a fleet with equipment in all three horsepower groups must calculate three fleet average PM emission rates and comply with three fleet averages.

Fleets of construction/mining equipment and industrial equipment may include only mobile diesel-fueled off-road compression ignition equipment over 25 horsepower in their fleet average calculations. Fleets of airport ground support equipment may include mobile electric equipment over 25 horsepower in their fleet average calculations. The Emission Factor for electric equipment is zero.

**Construction/Mining Equipment Fleet Average Targets  
[g/bhp-hr]**

<b>Compliance Date</b>	<b>Horsepower group</b>		
	<b>26-174 hp</b>	<b>175-750 hp</b>	<b>&gt;750 hp</b>
<b>1/1/2010</b>	0.30	0.15	0.16
<b>1/1/2013</b>	0.13	0.07	0.09
<b>1/1/2017</b>	0.10	0.05	0.07
<b>1/1/2020</b>	0.08	0.04	0.06

**Industrial Equipment Fleet Average Targets**  
[g/bhp-hr]

	Horsepower group		
Compliance Date	26-174 hp	175-750 hp	>750 hp
1/1/2010	0.30	0.19	0.17
1/1/2013	0.14	0.09	0.11
1/1/2017	0.10	0.05	0.10
1/1/2020	0.08	0.04	0.09

**Airport Ground Support Equipment Fleet Average Targets**  
[g/bhp-hr]

	Horsepower group	
Compliance Date	26-174 hp	175-750 hp
1/1/2010	0.30	0.15
1/1/2013	0.10	0.06
1/1/2017	0.08	0.04
1/1/2020	0.06	0.03

c. Idling Limit

As of January 1, 2008, small and large fleets must not idle mobile diesel-fueled off-road compression ignition equipment over 25 horsepower for more than 5.0 minutes.

As of January 1, 2008, large fleets must also have a written idling policy that limits idling to 5.0 minutes or less.

The idling limit need not apply to:

- (1) idling when queuing,
- (2) idling to verify that the equipment is in safe operating condition,
- (3) idling for testing, servicing, repairing or diagnostic purposes,
- (4) idling necessary to accomplish work for which the equipment was designed such as operating a crane.

An equipment owner may apply to the Executive Officer for a waiver to allow additional idling beyond 5.0 minutes. The equipment owner must provide justification as to why such idling is necessary.

We would like to solicit input from stakeholders on any additional exemptions that would be appropriate.

d. Special Provisions/ Compliance Extensions

1. **Verified Diesel Emission Control System (VDECS) Failure:** For any VDECS installed pursuant to the BACT path in this regulation, if the VDECS fails or is damaged within its warranty period and it can not be repaired, the owner must replace it with same level VDECS or meet another BACT option for the equipment within 90 days of the failure. For any VDECS installed pursuant to the BACT path in this regulation, if the VDECS fails or is damaged outside of its warranty period and it cannot be repaired, within 90 days of the failure, the owner must replace it with highest level VDECS available for engine at time of failure or meet another BACT option for the equipment.

For any VDECS installed pursuant to the fleet average path in this regulation, if the VDECS fails or is damaged within its warranty period and it can not be repaired, the owner must replace it with same level VDECS within 90 days. For any VDECS installed pursuant to the fleet average path in this regulation, if the VDECS fails or is damaged outside of its warranty period and it cannot be repaired, within 90 days of the failure, the owner must replace it with highest level VDECS available for engine at the time of failure.

2. **Fuel Strategy VDECS:**

(a) If an equipment owner determines that the highest level diesel emission control strategy for a small percentage of his fleet would be a level 2 fuel-based strategy, and implementation of this diesel emission control strategy would require installation of a dedicated storage tank, then the owner may request prior approval from the Executive Officer to allow use of a lower level diesel emission control strategy.

(b) If an owner elects to use level 2 fuel-based diesel emission control strategy across its fleet, and some equipment can use a level 3 hardware diesel emission control strategy, then the owner may request prior approval from the Executive Officer to allow use of the level 2 fuel-based diesel emission control strategy across his whole fleet.

3. **Equipment to Alleviate an Emergency Event:** Equipment to alleviate an emergency event is exempt from the fleet requirements above.
4. **Compliance Extension for an Engine Near Retirement:** If a large fleet owner chooses the BACT path and has applied BACT to its fleet pursuant to the schedule above, and the next engine(s) subject to the BACT compliance schedule are scheduled to be retired from the active fleet within one year of the applicable compliance deadline, the owner does not need to apply BACT to those engines, provided (1) BACT has been or is being applied to all other engines in the owner's fleet, and (2) the owner maintains appropriate records

and documentation regarding the assigned retirement dates and the engines are retired on or before the assigned dates.

5. **Use of Experimental Diesel Particulate Matter Emission Control**

**Strategies:** An owner may apply to the Executive Officer for an annual compliance extension for the use of an experimental, or non-verified, diesel PM control strategy if a VDECS is not available or if the owner can demonstrate that an existing VDECS is not feasible for their equipment or application. The owner or operator shall keep documentation of this use in records as specified. The application must include emissions data demonstrating the experimental control achieves at least a Level 1 diesel PM emission reduction. If the emissions data demonstrates that the device achieves at least 25% reductions in PM, it may be treated like a Level 1 VDECS for the purposes of complying with the performance requirements in IV. If the emissions data demonstrates that the device achieves at least 50% reductions in PM, it may be treated like a Level 2 VDECS. If the emissions data demonstrates that the device achieves at least 85% reductions in PM, it may be treated like a Level 3 VDECS.

Each equipment engine retrofit with the experimental strategy will be considered to be in compliance for the duration of the experiment, until the extension expires. The owner must bring the equipment into compliance within six months of the end of the annual compliance extension.

6. **Commercial feasibility:** An owner may apply to the Executive Officer for a compliance extension if no VDECS is commercially available for a piece of equipment, and replacing or repowering the equipment is not commercially feasible.

7. **Compliance Extension for Equipment Manufacturer Delays.** An owner or operator who has purchased new equipment in order to comply with this regulation, will be considered to be in compliance if the new equipment has not been received due to manufacturing delays as long as the following conditions are met:

- (a) The equipment was purchased, or the owner and seller had entered into contractual agreement for the purchase, at least six months prior to the required compliance date; and
- (b) Proof of purchase, such as a purchase order or signed contract for the sale, including engine specifications for each applicable equipment, must be maintained by the owner and provided to an agent or employee of ARB upon request.

V. **Ban on Sale and Purchase of Tier 0 Equipment** – After January 1, 2008, no person who is engaged in California in the business of selling to an ultimate purchaser used mobile diesel-fueled off-road compression ignition equipment over 25 horsepower,

including but not limited to, manufacturers, distributors, and dealers, shall sell, offer for sale, import, deliver, purchase, receive, or otherwise acquire a piece of such equipment that has a Tier 0 engine, unless the engine has been retrofit with a Level 2 or 3 VDECS.

VI. **Record keeping –**

Fleet owners must maintain the records listed below and provide them to an agent or employee of the Air Resources Board upon request.

a. Small and Large Fleets –

1. **Owner Contact Information**

2. **Engine List** – A list of each engine subject to the off-road in-use rule, and its make, model, engine family, engine serial number, model year, application, horsepower, and any retrofit emission control equipment (including VDECS level). Each engine in an owner's fleet should be assigned a unique sequential engine identification number (1, 2, 3, etc.)

3. **Label** – The owner or operator of each piece of equipment subject to the off-road in-use rule shall keep the following information affixed to the driver's side door jamb, or another readily accessible location known by the owner or operator, in the form of a legible and durable label or in an alternative form approved by the Executive Officer that is immediately accessible at the time of inspection – owner, engine identification number(s) for any engines in the equipment. The label should allow an inspector to find the engine on the owner's engine list, identify its characteristics such as horsepower and model year, and, for large fleets, to identify the BACT option, Emission Factor used for fleet averaging, and any VDECS that ought to be installed.

4. **Low-Use Equipment** – For equipment defined as low-use, annual usage records (hour meter readings) for the past 3 years. If less than three years of engine operating hour data are available, the annual engine operating hours since January 1, 2007 may be recorded.

5. **VDECS Failure** – Records of any VDECS failure and replacement

b. Large Fleets –

1. **Compliance Path** – The compliance path chosen – BACT or fleet average.

2. **BACT** – For large fleets on the BACT path, record the following:

(a) Control Strategy – For each engine on the engine list, indicate the Model Year Group. For Model Year Groups for which the first compliance date in IV.b.1. has passed, show which BACT option each engine has met and demonstrate that the required percent BACT (25, 50, 75, or 100%) has been met.

(b) No Tier 4/VDECS Justification - Justification that no VDECS or final Tier 4 engine is available for any engines meeting BACT with the "No Tier 4 engine or VDECS available" option.

3. **Fleet Average** – For large fleets on the fleet average path, record the following:

(a) Emission Factor for each engine subject to the off-road in-use rule, including any assumed reduction due to VDECS,

(b) The fleet average emission rate for each horsepower group (26-174 hp, 175-750 hp, and >750hp), calculated according to the formula in Section IV.b.2. for the most recent of the following dates that has already passed – January 1, 2010, January 1, 2013, January 1, 2017, and January 1, 2020.

- c. Experimental Diesel PM Control Strategy – For fleets using an experimental diesel PM control strategy, approval from the Executive Officer for use of the experimental diesel PM control strategy, the test plan and test data used in the experimental diesel PM control strategy application, etc.

## VII. Reporting –

- a. Initial equipment reporting – Owners of small and large fleets must submit the following to ARB by January 1, 2008.
  - 1. Owner Contact Information
  - 2. Engine List – A list of each engine subject to the off-road in-use rule, and its sequential engine identification number, make, model, engine family, engine serial number, model year, application, horsepower, and any retrofit emission control equipment.
  - 3. Low-Use Equipment – For equipment that owners intend to define as low-use, report the annual hours of use based on a three calendar-year rolling engine-hour average. If less than three calendar years of engine operating hour data are available, the annual engine operating hours since January 1, 2007 may be reported.
  - 4. Compliance Path – Owners of large fleets must report the compliance path chosen – BACT or fleet average.
  - 5. Fleet Averages – Owners of large fleets choosing the fleet average path must report the Emission Factor as defined in Section IV.b.2. for each engine, and the fleet average emission rate for each horsepower group (26-174 hp, 175-750 hp, and >750hp), calculated according to the formula in Section IV.b.2.
- b. BACT Path Annual Compliance Demonstration – By March 1 of the year following the first compliance date for an owner's fleet, and annually thereafter through 2029 for each year for which the owner's fleet has a compliance date, large fleet owners on the BACT path must submit the following to ARB:
  - 1. Owner Contact Information
  - 2. Compliance Certification – A certification signed by a responsible official that the fleet is in compliance.
  - 3. BACT Control Strategy – A list of each engine in a Model Year Group with a compliance date in the reporting year, its sequential engine identification number, make, model, engine family, engine serial number, model year, application, horsepower, and control strategy implemented.
  - 4. Low-Use Equipment – For equipment defined as low-use, report the sequential engine identification number and annual hours of use based on a three calendar-year rolling engine-hour average. If less than three years of engine operating

hour data are available, the average annual engine operating hours since January 1, 2007 may be reported.

5. **No Tier 4 or VDECS Available** – Owner must provide justification that no VDECS or final Tier 4 engine is available for any engines meeting BACT with the “No Tier 4 engine or VDECS available” option.

- c. **Fleet Average Compliance Demonstration** – By March 1 of 2010, 2013, 2017, and 2020, large fleet owners on the fleet average path must submit the following to ARB:

1. **Owner Contact Information**
2. **Compliance Certification** – A certification signed by a responsible official that the fleet is in compliance.
3. **Engine List** – List of each engine subject to the off-road in-use rule, its sequential engine identification number, make, model, engine family, engine serial number, model year, application, horsepower, and any retrofit emission control equipment, and Emission Factor as defined in Section IV.b.2.
4. **Low-Use Equipment** – For equipment defined as low-use, report the sequential engine identification number and annual hours of use based on a three calendar-year rolling engine-hour average.
5. **Fleet Average** – The fleet average emission rate for each horsepower group (26-174 hp, 175-750 hp, and >750hp), calculated according to the formula in Section IV.b.2.

- d. **Small Fleet 2017 Reporting** – By March 1, 2017, small fleet owners must submit the following to ARB:

1. **Owner Contact Information**
2. **Compliance Certification** – A certification signed by a responsible official that the fleet was in compliance as of Jan. 1, 2017.
3. **Low-Use Equipment** – For equipment that owners are defining as low-use, report the annual hours of use based on a three calendar-year rolling engine-hour average.

- VIII. **Right of Entry** – An agent or employee of the Air Resources Board has the right of entry to any facility where off-road equipment is or off-road equipment records are for the purpose of inspecting off-road equipment and their records to determine compliance with these regulations.

- IX. **Penalties** – Any person who fails to comply with this regulation or fails to submit any information, report, or statement required by this regulation is subject to a civil penalty ranging from five hundred dollars (\$500) to ten thousand dollars (\$10,000) for each day that the information, report, or statement is not submitted, or that the violation continues (Section 44381, California Health and Safety Code).

Any person who knowingly submits any false statement or representation in any application, report, statement, or other document filed, maintained, or used for the purposes of compliance with this regulation is subject to a civil penalty of not less than one thousand dollars (\$1,000) or more than twenty-five thousand dollars (\$25,000) per

day for each day that the information remains uncorrected (Section 44381, California Health and Safety Code).

**Appendix A – Emission Factors for Engines not Certified to a PM Emission Standard [g/bhp-hr]**

	<b>1969</b>	<b>1970-71</b>	<b>1972-1987</b>	<b>1988</b>	<b>1989-1995</b>	<b>1996-1999</b>	<b>2000-2002</b>	<b>2003</b>
25-49	0.684	0.684	0.684	0.684	0.684	0.684	--	--
50-74	0.756	0.756	0.756	0.756	0.621	0.621	0.690	0.690
75-99	0.756	0.756	0.756	0.756	0.621	0.621	0.690	0.690
100-174	0.693	0.594	0.495	0.343	0.343	0.343	0.380	--
175-299	0.693	0.594	0.495	0.343	0.343	--	--	--
300-599	0.666	0.568	0.478	0.343	0.343	--	--	--
600-750	0.666	0.568	0.478	0.343	0.343	--	--	--
751+	0.666	0.568	0.478	0.343	0.343	0.343	--	--

These factors are scaled from the emission factors in Table B-12 Emission Factors for Off-road Diesel Engines [g/bhp-hr] of the 2005 Moyer Guidelines, Appendix B (1.25 times the Moyer emission factor).